

REMARKS

Status

Claims 1-11, 13, 14, 30, and 49-70 are pending. There are a total of 36 pending claims, four of which are independent.

This Applicants acknowledge with appreciation the withdrawal of previous rejections under 35 U.S.C. § 103(a) in all but claims 30 and 64, but note new grounds of rejections are asserted against those claims in which the previous grounds were withdrawn, the new grounds of rejection including newly-cited art.

Objection of the Specification under 37 C.F.R. § 1.75(d)(1)

The previous Office Action dated March 3, 3008, included an Objection to the Specification Under 37 C.F.R. § 1.75(d)(1) (hereinafter, “Rule 75(d)”) and MPEP § 608.01(o). In the Supplemental Amendment filed October 22, 2008, Applicants traversed the Objection to the Specification because the terms are well known terms of art, and are clear and definite when read in light of the specification as a whole. The currently outstanding Office Action states that “Applicants argument as to whether the term is clear is irrelevant since the claims were not rejected under 112” and “[s]ince there is no description of the term in the specification, the objection is upheld” (page 3). Applicants respectfully submit that there is no underlying legal or procedural basis on which to make such an objection, and request reconsideration in view of the following arguments, presented here in response to the points raised by the Office Action. Since the objection was “upheld” in the Office Action, Applicants will treat the objection as being currently outstanding, even though it was not repeated in the Office Action.

The Office Action emphasizes that “[s]ince the term is not contained in the description then there is no possible way the meaning of the term can be ascertained by reference to the description” (emphasis in original). Applicants agree that the meaning of a term cannot be ascertained by reference to the description alone if the term is not present in the description. However, to suggest that the term must be present in the written description directly contradicts MPEP 2173.05(e) (discussed below) which unequivocally states that antecedents are not required. Therefore, Applicants submit that there is no requirement that the description alone define each claimed term.

Instead, Applicants respectfully submit that if a person of ordinary skill in the art can ascertain the meaning the term with a reasonable degree of certainty and precision from the specification in conjunction with their own knowledge and experience, then an objection under Rule 75(d) is improper.

Rule 75(d) states:

“The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description. (See § 1.58(a)).

In the Office Action, the Examiner also relied on MPEP 608.01(o), which includes some explanation of Rule 75(d), and similarly states that:

“The meaning of every term used in any of the claims should be apparent from the descriptive portion of the specification with clear disclosure as to its import; and in mechanical cases, it should be identified in the descriptive portion of the specification by reference to the drawing, designating the part or parts therein to which the term applies.”

Initially worth noting is that these sections do not contain an explicit requirement that each term or phrase used in the claims be matched with an antecedent in the specification, only that such terms and phrases “find clear support . . . so that the meaning of the terms in the claims are ascertainable by reference to the description” (emphasis added). As stated in MPEP 2173.05(e),

“The mere fact that a term or phrase used in the claim has no antecedent basis in the specification disclosure does not mean, necessarily, that the term or phrase is indefinite. There is no requirement that the words in the claim must match those used in the specification disclosure. Applicants are given a great deal of latitude in how they choose to define their invention so long as the terms and phrases used define the invention with a reasonable degree of clarity and precision” (emphasis added).

Thus, MPEP 2173.05(e) clarifies Rule 75(d) by indicating that the minimum “support” requires neither antecedent, nor explanation, nor definition of the claim term in question. Instead, MPEP 2173.05(e) states quite clearly that “[t]here is no requirement that the words in a claim must match those used in the specification” and that Rule 75(d) only requires that the terms and phrases define the invention “with a reasonable degree of clarity and precision.” The Office is not at liberty

to ignore its own policy as stated unequivocally in the MPEP.¹ Since there is no requirement that the terms even appear in the written description, the phrases, “find clear support . . . in the description” and “ascertainable by reference to the description” of Rule 75(d) as interpreted by MPEP 2173.05(e) do not require that each term in the claims appear in the written description.

Having identified what Rule 75(d) does not require, we turn now to what Rule 75(d) does require. The only guidance given to Applicants with respect to Rule 75(d) are the following useful phrases: “clear support . . . in the description;” “ascertainable by reference to the description;” and “apparent from the descriptive portion.” Since MPEP 2173.05(e) (quoted above) explains that the terms in the claims need not have matching terms in the specification, and it is *simply not possible to derive the meaning of a term from the written description alone when the term does not appear in the written description*,² there must be some other source of information that, combined with the written description, allows one to identify the meaning of the claim term to a reasonable degree of clarity and precision. Thus, when Rule 75(d) states that the term must have “clear support” or have meaning that is “readily ascertainable” from the written description, it is also true that the written description need not stand alone in providing the support or meaning.

Instead, the Office can rely on the knowledge and experience of the person having ordinary skill in the art to which the written description pertains. The Federal Circuit held that “[d]uring examination, . . . ‘claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art’” (*In re American Academy of Science Tech Center* 70 USPQ2d 1827 1830 (Fed. Cir. 2004) (internal citations removed) (emphasis added). Thus, if the specification is directed to a particular field of endeavor, all the knowledge and experience of the person of ordinary skill in that field may be called upon to determine whether the meaning of the term in the claim is clear to the required “reasonable degree of clarity and precision.” Therefore, the appropriate test to determine whether a claim term is adequately supported by the specification, is whether the person of ordinary skill in the art would be able to ascertain the meaning of the claim term with a reasonable degree of clarity and precision upon reading the specification.

¹ *Hyatt v. Dudas*, 393 F. Supp. 2d 1, 7-8, 2005 U.S. Dist. LEXIS 24285 (D.D.C., 2005) (“Although the MPEP does not have the force of law, the MPEP is made available to the public and . . . describe[s] procedures on which the public can rely”) (internal citations removed).

² The Office Action supports this view in declaring that when a term does not appear in the description, “there is no possible way the meaning of the term can be ascertained by reference to the description” (Office Action, page 3).

At a minimum, the specification provides a context by which a term may be interpreted. For instance, a particular term such as “plasma” may have one well understood meaning in the field of biology, and another in physics. Being well defined in their respective fields, in neither case should an Applicant be required to identify the meaning of the term. In this case, the meaning of “plasma” can be ascertained from the written description even though it does not appear in the written description.

Therefore, if the meaning of a term could not be ascertained to a reasonable degree of clarity and precision from the descriptive portion of the specification by a person of ordinary skill in the art, then Applicants concede an objection under Rule 75(d) may be appropriate. This does not mean that the specification must include an explanation or definition, or even antecedent, for each claim term, but instead, only that the terms must be understood by the person of ordinary skill in the art upon reading the specification. If the claim term is clear and definite, i.e., its meaning is clear to a reasonable degree of clarity and precision, then such an objection to the specification should not be made. This rule—that the specification is not required to include a dictionary definition or explicit antecedent for each claim term—is consistent with the policy of not requiring unnecessary and extraneous matter relating to well-understood concepts or principles in patent applications.³

The present application is directed to system-level software designed to interact with guest virtual machines and a plurality of network interface cards. The person of ordinary skill in the art is certainly aware that computer programs are typically stored on (or embodied by) computer-readable media such as computer disks or other memories, and would therefore have a good understanding of the meaning of the phrase “computer readable medium.” Therefore, from the specification, the meaning of this phrase would be clear despite the fact that the phrase does not appear in the written description. Accordingly, Applicants respectfully request reconsideration and withdrawal of this Objection to the Specification.

Claim Rejections – Mahalingam, Vega, and Carollo

Claims 1-10, 68, and 70 stand rejected under 35 U.S.C. § 103(a) for being unpatentable over U.S. Patent 6,208,616 to Mahalingam et al. (hereinafter referred to as “Mahalingam”) in view of U.S.

³ *Evans v. Eaton*, 20 U.S. 356 (S.Ct. 1822) (“[t]he law does not require of patentees to describe new and old, but merely to distinguish new from old. Otherwise a patent would be more complex and voluminous than a Welsh pedigree”).

Patent 7,136,800 issued to Vega (hereinafter referred to as “Vega”) and U.S. Patent Application Publication 2004/0267866 filed by Carollo et al. (hereinafter referred to as “Carollo”) (Office Action, page 5). The Office Action further states that claims 51-63 correspond to claims 1-11 and 13, 14 and that they are rejected for the same reasons (Office Action, page 13). Therefore, Applicants interpret this to mean that claims 51-60 are also rejected for being unpatentable under 35 U.S.C. § 103(a) over Mahalingam in view of Vega and Carollo. Applicants respectfully traverse for the reasons explained below.

Applicants appreciate the acknowledgement in the Office Action that the previous argument that the prior art lacks motivation to combine Vega and Mahalingam was persuasive (Office Action, page 3, last two lines). However, the Office states that,

“a new rejection is made in light of Carollo et al. . . . which teaches a method for managing NICs (paragraph 37)” (Office Action, bridging pages 3 and 4). Specifically, the Office Action states, “Carollo provides motivation to combine and teaches a method for managing NICs (paragraph 37). Based on the teachings of Carollo it would have been obvious . . . to modify Mahalingam with the teachings of Vega for the purpose of managing NICs” (page 5, lines 17-21⁴).

Applicants respectfully disagree. Carollo is directed to a system for managing virtual NICs as part of a virtual network connecting a plurality of virtual machines to a physical network. In Carollo, each VM has one virtual NIC, and there is a single physical NIC (“adapter card 500” – see paragraph 33). There is no suggestion in Carollo that NIC management is interchangeable or even comparable with processor management at the system level of a virtualized computer system. The portion of Carollo referenced by the Office Action, i.e., paragraph 37, describes handling communication between applications running in separate virtual machines via corresponding virtual NICs and between such applications and an application running in a different tangible computer system.

Applicants do not see any suggestion in Carollo of a desirability to use VM-specific information to select a particular physical NIC from a plurality of physical NICs. Furthermore, Applicants do not see any suggestion in Carollo that physical NIC resources is comparable to processor resource. As noted in the Amendment submitted October 9, 2008, a NIC cannot be

⁴ Line numberings for referenced documents count every printed line only, including headings, but not including the page header, unless the referenced document is already includes line numberings, as with issued U.S. Patents.

managed in the same manner as a processor due to the structural differences of how NICs are shared between virtual machines as compared with processors. See, e.g., the discussion on pages 16-17 of that Amendment. Traditionally, NIC teaming was implemented from within the virtual machine and the physical NIC driver at the hypervisor level was not aware of which VM originated a particular outgoing data frame. Instead, all network traffic was treated the same regardless of the originating virtual machine. Therefore, there is no straight path from using VM-specific information in determining how to divide processor time to using VM-specific information in selecting a NIC from a plurality of physical NICs when sending an outgoing data frame.

For an obviousness type rejection, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings (MPEP 2143.01). Under *KSR*⁵, a number of rationales are available to the Patent Office to issue an obviousness rejection. However, regardless as to the rationale, it must be clearly articulated why the claimed invention would have been obvious. Applicants respectfully submit that such a clear articulation has not been provided. For instance, it has not been explained how the two references, Vega and Mahalingam, could be combined to arrive at the claimed invention, or exactly Carollo would have encouraged the person of ordinary skill in the art to make the combination as claimed.

Applicants respectfully note that in *KSR, infra*, obviousness was concluded where “all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1395 (2007). In the present case, the elements cannot be combined “with no change in their respective functions” since none of the references teach selecting a NIC to for an outgoing data frame using VM-specific information. Once one accepts the notion that the allocation algorithm supplied in Vega cannot be directly used to make a NIC selection due to the disparate natures of the two different types of computer resources, then that person must accept that some adaptation of Vega would be necessary to make management decisions for a plurality of NICs based on VM-specific information. Without such adaptation, there

⁵ *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007)

would not have been a reasonable expectation of success. Hence, the facts of the present case cannot be compared with those in *KSR*.

Vega teaches sharing of processor resources among a plurality of virtual machines, Mahalingam teaches NIC teaming, and Carollo teaches a virtual network connecting virtual machines with each other and a physical network. Incidentally, NIC teaming *per se* is a well-known concept commonly used in high-capacity servers. See, for example, Applicants discussion in paragraphs 71 and 72 of the present application. The novelty of applying failover, fail-back, and load-distribution functionality from a component of the virtualization software layer, provides additional benefits heretofore unrecognized. Specifically, the NIC manager can determine the source VM of each outgoing dataframe and decide how, or even if, the data frame should be routed using this information. See paragraph 75 of the present application. By taking into consideration VM-specific information, the invention goes beyond simply implementing NIC teaming in a virtualized computer system. Applicants regard this as an important advance in the field of computer virtualization. None of the prior art references mention any specific advantage for arriving at the claimed invention.

Since the Office Action does not provide a clear articulation as to why the cited references would have been combined in such a manner as to arrive at the claimed invention, it can be inferred that the Examiner is instead relying on improper hindsight analysis.⁶ Accordingly, Applicants respectfully submit that claims 1 and 51 are allowable over the prior art of record, and early allowance of the same is respectfully requested. Claims 2-10, 51-60, 68, and 70 depend from either claim 1 or claim 51, and should therefore be allowed for at least the same reasons as claims 1 and 51.

Claim Rejections – Mahalingam, Vega, Carollo, and Ishizaki

Claims 67 and 69 stand rejected under 35 U.S.C. § 103(a) for being unpatentable over Mahalingam, Vega, Carollo, and U.S. Patent 6,810,421 issued to Ishizaki et al. (hereinafter, “Ishizaki”). Applicants respectfully traverse because none of the cited references teach “deciding, based on the NIC management information and the VM-specific information, whether to transfer the outgoing data frame; discarding the outgoing data frame if a decision is made not to transfer the

⁶ *In re Kahn*, 441 F. 3d 977, 998 (Fed. Cir. 2006) (“When the Board does not explain the motivation, or the suggestion or teaching, that would have led the skilled artisan at the time of the invention to the claimed combination as a whole, we infer that the Board used hindsight to conclude that the invention was obvious” (citation omitted).)

outgoing data frame.” The Office Action cites Ishizaki for showing this feature (Office Action, sentence bridging pages 9 and 10). However, Ishizaki does not suggest discarding outgoing frames. The portion of Ishizaki cited in the Office Action, col. 8, lines 42-50, states,

“The packet transfer processing unit 530 searches the routing table 465 using the destination address of a received packet as a key. [. . .] If there is no routing entry that matches the destination address [*of the received packet*], the packet transfer processing unit 530 discards the packet and notifies the packet sending source of an error” (col. 8, lines 42-50) (emphasis added).

Hence, Ishizaki merely describes discarding data packets that are received (i.e., is an *incoming* packet) by a network node but are not addressed to the a recipient that is managed by the node. This is not the same as discarding an outgoing data frame as set forth in claims 67 and 69.

Since Ishizaki does not cure the deficiencies of Mahalingam, Vega, and Carollo, and none of the cited references teach or suggest each and every limitation set forth in the claims, Applicants respectfully submit that claims 67 and 69 should be allowed. Reconsideration and withdrawal of the outstanding rejections with respect to claims 67 and 69 is therefore respectfully requested.

Mahalingam, Vega, Carollo, and Rietschote

Claims 11 and 13 stand rejected under 35 U.S.C. § 103(a) for being unpatentable over Mahalingam in view of Vega, Carollo, and U.S. Patent 7,203,944 issued to Rietschote et al. (hereinafter, “Rietschote”) (Office Action, page 10). The Office Action also specifies that claims 49 and 50 correspond to claims 13 and 14 (Office Action, page 13, lines 5-8). And further that claims 51-63 correspond to claims 1-11 and 13-14, and claims 64-66 correspond to claims 30 and 13-14. Applicants understand all this to mean that claims 11, 13, 14, 49, 50, 61-63, 65, and 66 are rejected under 35 U.S.C. § 103(a) for being unpatentable over Mahalingam in view of Vega, Carollo, and Rietschote. Applicants respectfully traverse because Rietschote fails to cure the deficiencies of Mahalingam, Vega, and Carollo noted above.

Specifically, Rietschote is directed to a method for migrating a virtual machine for the purpose of load balancing (see, Rietschote, e.g., the title). Rietschote does not suggest selecting a NIC from a plurality of NICs based on VM-specific information for transferring an outgoing data frame. Since Rietschote does not cure the deficiencies of Mahalingam, Vega, and Carollo, Applicants respectfully submit that claims 11, 13, 14, 49, 50, 61-63, 65, and 66 should be allowed

for the same reasons as dependent-upon claims as mentioned above. Applicants further note that claims 13, 62, and 63 depend from one of claims 67 and 69, which were rejected in part on Ishizaki, and that Rietschote plus Ishizaki also does not cure the deficiencies of Mahalingam, Vega, and Carollo. Claims 49, 50, 65, and 66 depend from one of claims 30 or 64, which were rejected on the basis of Macchiano, Vega, and Mahalingam, discussed below. Rietschote + Macchiano does not cure the same deficiencies. Reconsideration and allowance of claims 11, 13, 14, 49, 50, 61-63, 65, and 66 is respectfully requested.

Claim Rejections – Macchiano

Claims 30 and 64 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 7,111,303 issued to Macchiano et al. (“Macchiano”) in view of Vega and Mahalingam. Claim 64 is a “Beauregard” style claim that generally corresponds in scope to the claim 30, which is a method claim.

Macchiano is directed to a virtual networking system for connecting a plurality of virtual machines (referred to by Macchiano as “user portions” (see col. 4, lines 50-52)) running on a single physical computer system. Each virtual machine has a corresponding virtual NIC 42, 44 as shown in Figure 1.

The Office Action misconstrues the Macchiano reference. Specifically, the Office Action states that,

“Macchiano also discloses, ‘the virtual computer system also comprising a first physical network interface card (NIC) and a second physical NIC for connecting to the computer network’ as describing each user portion having a virtual NIC and the computer system may also contain multiple physical NICs (see col. 3 lines 56-58 and Fig. 1 comp. 42-44; col. 5 lines 4-6)” (Office Action, pages 11-12).

Applicants have carefully reviewed the indicated portions of Macchiano and find no support there for a plurality of physical NICs. Macchiano does describe (referring to Macchiano, Fig. 1) a computer system 10 having two guest VMs 12, 14, each having a corresponding virtual NIC 42, 44. The indicated portions of the specification of Macchiano likewise show only virtual NICs, not physical NICs.

The Office Action additionally states that Macchiano discloses, in col. 3, lines 60-66, “determining which VM within the virtual computer system is involved in the requested data

transfer; and if the first VM is involved . . . transferring the data over the first NIC” (Office Action, page 12, lines 5-8). Applicants could not find such a disclosure in Macchiano at the identified location or any other place within Macchiano.

Furthermore, Macchiano does not disclose “transferring the outgoing data frame over an available one of the physical NICs if the one of the first VMs having higher priority provided the outgoing data frame; or discarding the outgoing data frame if the other of the VMs provided the outgoing data frame” as now set forth in claims 30 and 64. Furthermore, none of the remaining cited references teach this feature.

For the reasons mentioned above, Mahalingam and Vega fail to overcome the deficiencies of Macchiano. For at least the above-stated reasons, Applicants respectfully submit that claims 30 and 64, and claims depending therefrom, are allowable and therefore request reconsideration in view of the amendments now made to these claims.

Conclusion

Applicants respectfully request reconsideration of the outstanding rejections in light of the above arguments and a Notice of Allowance is respectfully and earnestly requested. The Examiner is invited to contact the undersigned at 650-427-2390 to discuss any additional changes the Examiner may feel is necessary in light of this Amendment.

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Respectfully submitted,

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